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Circulating miR-135 May Serve as a Novel Co-biomarker of HbA1c in Type 2 Diabetes

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Abstract

Hemoglobin A1c (HbA1c) is a reliable marker of insulin resistance in normal glucose tolerance patients; however, several physiological, environmental, and genetic factors may affect HbA1c and cause false results. Therefore, it is essential to use new biomarkers due to increasing diabetes predictive value. Recently, it has been indicated that microRNAs (miRNAs) are involved in the pathophysiology of diabetes, particularly, in insulin resistance pathways. Therefore, miRNAs have the potential to be introduced as new glycemic control biomarkers. The aim of this study was to investigate the association between plasma level of miRNA-135a and HbA1c in patients with prediabetes and type 2 diabetes. In this case-control study, 120 samples were enrolled (healthy individuals, people with type 2 diabetes, and prediabetes) and HbA1c and miR-135a expression level in their plasma samples were evaluated. Multinomial logistic regression and ROC curve analysis were conducted to assess the diagnostic accuracy of plasma miR-135a in T2D , prediabetes, and healthy control groups. Data analysis indicated that miR-135a was significantly elevated in both diabetes/prediabetes samples. Then, subjects were reclassified based on the calculated cutoff value of miRNA. Logistic Regression analysis showed that an increased level of miRNA positively correlated with HbA1c level in prediabetes (Adjusted OR = 1.14, p value = 0.033) and diabetic status (Adjusted OR = 1.27, p value = 0.024). miR-135 may provide an assistant marker for HbA1c to detect type 2 diabetes.

Keywords miR-135 · HbA1c level · Type 2 diabetes

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